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NOTES AND LITERATURE

ICHTHYOLOGY

Ichthyological Notes.—The State Laboratory of Natural History of Illinois has published an elaborate work entitled "The Fishes of Illinois," by Dr. Stephen A. Forbes and Robert Earl Richardson. In this work is given a full account of the topography of the state of Illinois, with excellent descriptions of all the species of fishes found in the state. Many of these are illustrated by colored plates, and the work is done with admirable conscientiousness and accuracy. An especial feature of the work is the very full account of the food of the different species of fishes.

In the *Proceedings of the United States National Museum* (Vol. XXXV, 1908), Professor J. O. Snyder describes eighteen new species of fishes from southern Japan and from the Riu Kiu Islands. Professor Snyder was the first ichthyologist to visit this most interesting group of islands.

In the same *Proceedings,* Professor Theodore Gill shows that the name Chœrodon is the oldest name for the genus commonly called Chœrops.

In the same *Proceedings,* Professor Snyder describes two rare fishes, from California, *Rimicola eigenmanni,* with which *R. muscarum* is identical, and *Plagiogrammus hopkinsi.*

In the *Proceedings of the Academy of Natural Sciences of Philadelphia* (1908), Henry W. Fowler gives an excellent synopsis of the Cyprinidæ of Pennsylvania, with notes on the material examined by Professor Cope. One new species, *Notropis keimi,* is described from the Allegheny River.

In "Annales de la Société Géologique du Nord" (T. XXXVI, 1907), Maurice Lariche presents observations on the fossil fishes of Patagonia, showing that the species of shark recently described as Cretaceous belong to the lower Miocene.

In the same *Proceedings* (T. XXXV, 1906), Lariche gives a review of the fossil fishes of the north of France. In his nomenclature he pays little attention to the law of priority.

In the same *Proceedings,* Lariche records various fossils from Brittany and other parts of France.

In the *Bulletin of the Geological Society of Belgium* (1908), Lariche records the presence of a species of Amia in the Hampstead Beds of the Isle of Wight.

In "Comptes rendus de l'Association Française pour l'Avancement des Sciences," Congress of Lyons (1906), Lariche describes and figures numerous species from Tertiary rocks near Montpellier.

The same author describes, in the "Annales de l'Université de Lyon" (1908), the vertebrates of the Nummulitique de l'Aude.

In the *Bulletin of the Museum of Natural History,* of Paris (1908), Dr. Jacques Pellegrin describes numerous characins from South America.

In "La Revue Coloniale" of Paris (1908), Dr. Pellegrin discusses the fresh water fishes of French Guiana, with their vernacular names.

In the *Bulletin of the Southern California Academy of Sciences* (1909), Mr. J. Z. Gilbert publishes an account of certain California flounders, with a figure of an unnamed fossil flounder from Miocene rocks at Lompoc, California. This species belongs to the large-mouthed group, with very strong teeth, but the body cavity is considerably larger than in the related species of the present time. The species will soon be described in detail by Mr. Gilbert.

In the *Proceedings of the Academy of Natural Sciences of Philadelphia* (1908), Professor Snyder describes the large ribbon-fish from Monterey Bay, California, under the name of *Trachypterus seleniris.*

In the *Proceedings of the New York State Teachers Association* for 1907, Dr. Wilder discusses the usefulness of the dogfish for educational purposes.

In the *Proceedings of the American Philosophical Society* for 1908, Dr. Wilder discusses the brain of the extraordinary Japanese Chimæra, *Rhinochimæra pacifica.* Dr. Wilder looks forward to the time when "no child shall reach the age of ten without exposing for himself, drawing, describing and dissecting the brain of some shark."

In the *Popular Science Monthly* (October, 1908), Professor W. S. Tower describes "The Passing of the Sturgeon" in America, the five species being practically exterminated all at once by murderous fishing methods. The most aggravated case of this kind is the destruction of the species inhabiting the Lake of the Woods by Michigan fishermen who took them by thousands from their spawning beds in Rainy River, preserving the eggs for caviar and throwing the bodies away.

In the *Biological Bulletin*, XIV (1908), B. G. Smith records the spawning habits of the minnow Chrosomus, this work being part of a series of investigations undertaken by the advanced students of Professor Jacob Reighard, of the University of Michigan.

In the *Bulletin of the Bureau of Fisheries* (Vol. XXVII, 1907), Professor Snyder records the "Fishes of the Coastal Streams of California," *Hybopsis crameri*, *Rhinichthys evermanni* and *Ptychocheilus umpquæ* are described as new species from the Umpqua region in Oregon, and *Catostomus humboldtianus* from Humboldt County, California. Professor Snyder shows that *Leuciscus caurinus* is a species of Leuciscus, and not identical with *Mylocheilus lateralis*. Professor Snyder gives an interesting map of the coastwise streams, showing the distribution of the different faunal groups.

In the same *Bulletin*, Professor Snyder discusses the "Fish Fauna of the Lakes of Southeastern Oregon" with reference to the distribution of the different forms. *Catostomus warnerensis* and *Rutilus oregonensis* from Warner Lake, and *Rutilus columbianus* from the Columbia River, are described as new species. A map of the isolated Warner Lake region, the remains of Lake Idaho, is given.

In the same *Bulletin*, the paper on the habits and distribution of fishes in the Sacramento Basin, by the late Cloudsley Rutter, is published. The manuscript, prepared before the death of the lamented author, who was one of the most careful observers of fishes connected with the Bureau of Fisheries, has been revised by Dr. Evermann. In this paper, *Catostomus microps*, *Cottus asperrima(us)* and *Cottus macrops*, new species from Modoc County, California, are described.

In the same *Bulletin* (1908), Jordan and Richardson describe the fishes collected in the Philippines by Richard Crittenden McGregor. Eleven new species are described and figured, and two hundred and ninety-five species are mentioned with critical notes.

In the *Hamburger Magalhænsische Sammelreise* (1907), Professor Einar Lönnberg describes the species taken in the Straits of Magellan.

In the Publications of the Department of Education of Ontario (1908), Mr. C. W. Nash, of Toronto, publishes a catalogue of the fishes of Ontario, with plates of many of the more important species. This is prepared primarily for the use of the teachers of Ontario, and is part of a volume containing all the vertebrate animals. It will prove extremely useful for the purposes for which it was prepared.

In a report of the Biological Survey of State of Michigan (1907), Thomas L. Hankinson gives a biological survey of Walnut Lake, with numerous plates, photographs and other illustrations, showing the nature of the fauna and flora.

In the Michigan Academy of Science, Mr. Hankinson gives a list of fishes of Hillsdale County, Michigan.

In the *Annuaire du Musée Zoologique de l'Académie Impériale des Science de St. Pétersbourg* (T. XIII, 1908), L. Berg gives a list of the fishes of the River Kolyma, with descriptions, mostly in Russian, of the various species found there.

In the same *Annuaire* is given a list of the fishes of the River Obi.

In the *Journal of the College of Sciences of the Imperial University of Tokyo* (1908), Shigeho Tanaka describes six new species and two new genera of fishes from Japan, with notes on other rare forms.

In the *Annotations Zoologicæ Japonenses* (1908), Tanaka gives a description of eight additional new species from Japan.

In the same *Journal* (1908), Tanaka describes "Tide-Pool Fishes of Misaki, Japan," with two additional new species.

In the same *Journal*, Tanaka records the fishes of Lake Biwa, with one new species.

In the *Zoological Magazine* (1908), Tanaka again records, in Japanese, the fishes of Lake Biwa, the largest of the Japanese lakes.

In the *Transactions of the Natural History Society of Sapporo,* Professor K. Otaki describes the Stickle-backs of Japan, in Japanese and in English, one new species being described.

In the same *Transactions,* Professor Otaki describes the common sturgeon of northern Japan, *Acipenser mikadoi.*

In the *Sitzungsberichten of the Vienna Academy* (1908), Dr.

Viktor Pietschmann describes the sharks of Japan, with descriptions of some new species.

In the same *Sitzungsberichten,* Dr. Pietschmann describes also two new Japanese species of shark, and he has also a paper comparing the European species of *Mustelus* with each other.

In the Smithsonian Miscellaneous Collections (1908), Professor Gill gives in detail the story of the devilfish, Manta, with numerous illustrative plates.

In the *Proceedings of the Zoological Society of London* (1908), Dr. Regan gives a valuable revision of the sharks of the family Orectolobidæ. To this family he refers Rhinodon, Ginglymostoma and other forms usually placed in separate families.

In the *Annals and Magazine of Natural History* (1908), Mr. Regan describes a collection of fresh-water fishes from Costa Rica, with several new species. *Joturus stipes,* from Central America, is made the type of a new genus, Xenorhynchichthys. A new genus, Tomocichla, near Herichthys, is also described.

In the same *Annals,* Mr. Regan discusses the systematic position of Stylophorus, which he places near the Allotriognathi. He discusses the work of Professor Starks on the same species, who, in the *Bulletin of the Museum of Comparative Zoology,* for 1908, makes Stylophorus the type of a new suborder, Atelaxia. The work of both of these anatomists shows that Stylophorus is related to Trachypterus and also to Velifer.

In the same *Annals,* Mr. Regan revises the species and subspecies of Coregonus found in Great Britain.

In the same *Annals,* Mr. Regan revises the char of Great Britain, adding a number of new species. Four old species and five new ones are recognized in place of the single *Salvelinus alpinus,* recognized by Day as found in British waters.

In the same *Annals,* Mr. Regan describes the species of char, six in number, found in the rivers of Ireland. He recognizes the fact that these species are of relatively recent date, and perhaps only partially separated from one another.

In the same *Annals,* Mr. Regan discusses a classification of the scombroid fishes, or mackerel-like fishes. He recognizes the extremely close relation of the Carangidæ with the perch-like forms, or Serranidæ.

In the same *Annals,* Mr. Regan revises the genus Elops, showing that instead of a single species, *Elops saurus,* there are seven well-marked species. This conclusion the writer has been able to verify in part, having specimens of *Elops hawaiensis* from Formosa as well as from Hawaii. Regan describes *Elops affinis*, from Mazatlan and Jalisco, the species being based on a specimen sent as *Elops saurus* by the present writer.

In the same *Annals* (1909), Mr. Regan takes up the impossible problem of defining the orders and sub-orders and equivalent groups of the teleostean or bony fishes. The paper is most suggestive and valuable, but no one adjustment of the intricate interrelationships of these fishes is likely to be more permanent than any other. It is encouraging, however, to notice the practical agreement between Mr. Regan's classifications and those adopted by American naturalists in matters in which the facts have become clearly apprehended.

In the same *Annals*, Mr. Regan gives an account of the fishes of the group Salanginæ, mostly of eastern Asia.

In the same *Annals*, Mr. Regan gives an account of new fishes from Lake Candidius, in Formosa.

In the *Annals of the South African Museum* (1908), J. D. F. Gilchrist and W. W. Thompson give descriptions of fishes from the coast of Natal, with descriptions of numerous species.

In the same *Annals*, Gilchrist and Thompson give an account of the blennies of South Africa, the species referred to Clinus being especially numerous.

In the *Annals of the Queensland Museum*, J. D. Ogilby describes numerous new or little-known fishes from the Queensland Museum in Brisbane. Among other things, he claims that the name Dampieria should supersede Labracinus, recently resurrected to take the place of Cichlops, which is preoccupied.

In the Publications of the Department of Fisheries for New South Wales, David G. Stead gives an interesting account of the beaked salmon, Gonorhynchus.

In the same Publications Mr. Stead gives descriptions of three new species of fishes from New South Wales.

In the *Proceedings of the Royal Society of Queensland* (1907), Mr. J. D. Ogilby describes seven new species of fishes from the coast of Queensland. He divides the genus Tylosurus into three, separating from it Stenocaulus, with body short and deep, the type being *kreffti*, and Eurycaulus, with the caudal peduncle strongly keeled, the type *platyura*.

In the same *Proceedings*, Mr. Ogilby describes numerous new species and genera of fishes from Queensland.

In the "Scientific Investigations of the Fishes of Ireland" (No. V, 1908), Holt and Byrne record certain fishes of the Irish Atlantic Slope.

In the *Bulletin of the Department of Agriculture in the Dutch East Indies* (1908), Van Kampen describes the larva of Megalops, which passes through changes similar to those already recorded for Albula.

In the Norwegian journal *Naturen* for 1908, Stejneger discusses in Norwegian the species of char found in Norway, *Salvelinus salvelinus* and *Salvelinus alpinus*.

In the *Journal of Comparative Neurology and Psychology* (Vol. XVIII, No. 6, 1908), Professor J. B. Johnston describes in detail the nervous system of the lamprey.

In the same *Journal*, Professor Johnston further discusses the physiology of the nerves of the lamprey.

In the *Anatomical Record* (Vol. II, No. 6, 1908), Professor Johnston discusses the question of the presence of the glossopharyngeal nerve in the hagfish.

In the same *Journal*, Professor Stockard gives a note on the same subject.

In the *Zoologischen Jahrbuchern of Jiessen* (1908), E. P. Allis, Jr., discusses the bloodvessels in various bony fishes.

In the same *Journal*, Dr. E. Philippi discusses the name and development of certain viviparous fishes of the genus Glaridichthys.

In the American Breeders Association (Vol. IV), the Committee on Breeding Fish, J. W. Titcomb, Chairman, discuss the possibility of improvement of fish stock by selective breeding.

In the *Memoirs of the Royal Society of Copenhagen* (1908), Dr. H. F. E. Jungersen gives an elaborate account of the genera of fishes related to Centriscus. This is a most valuable contribution to our knowledge of the fishes of this type, and ought to help settle the questions as to their relationship to other related forms.

In the *Transactions of the Royal Society of Edinburgh* (Vol. 45, 1907), W. E. Agar gives a valuable account of the paired fins in Lepidosiren and Protopterus, with special reference to the nerve structures.

In the Annual Report of the Department of Marine and Fisheries for Canada, are given valuable studies of the effect of dynamite explosions and sawdust on fish life. The evil effects of dynamite are here clearly emphasized by Professor A. P. Knight. Professor Knight does not, however, find the effect of sawdust as injurious as has been hitherto supposed. A strong solution of sawdust poisons fish and fish fry, through the agency of compounds dissolved out of the wood cells. Fishes will desert a river polluted with freshly made sawdust, going down stream or into tributaries to escape from the disagreeable influence of the sawdust extracts. Waste matters which would be deadly in one river will pass away and prove of little harm in another, where the conditions are different.

In the *Journal of Morphology* (1908), Reighard and Mast describe the development of the hypophysis of Amia.

In the *Journal of Experimental Zoology* (1909), Professor C. R. Stockard describes the development of the young of *Fundulus heteroclitus* in magnesian solutions instead of salt water. The result is the development of cyclopean fish, with a single coalesced eye on the top of the head. It is thought that magnesia possesses an anesthetic effect, and is inhibitory in its influence on muscular activity. It, therefore, retards the outpushing of the eyes in the embryo, leaving the eyes without energy for perfect development, and at times without energy sufficient for their normal separation.

In the *Outing Magazine* (September, 1908), Bonnycastle Dale describes the mystery of the salmon, and its desperate struggle to breed in the waters of the Columbia, with some excellent photographs.

Under the head of "The Fishes of Japan," Otaki, Fujita and Higurashi continue their fifth volume of discussion of the Japanese fisheries and fishing methods. The fourth volume contains colored plates of a number of Japanese food fishes. The text is entirely in Japanese.

David Starr Jordan.

PARASITOLOGY

The question as to the relation of the tse-tse fly which is absolutely demonstrated to be the transmitting agent of sleeping sickness and the parasite of the disease is one that has been discussed pro and con with great vigor. Minchin and others contend most powerfully that the fly is a mere mechanical vector while Manson and his supporters, chiefly, it must be confessed,